

In the Specification

Please replace paragraph [0003] with the following:

[0003] As ~~the~~ PBT is essentially combustible, PBTs are required to have safety against flames, that is, flame retardancy, and in many cases need to have such high degrees of flame retardancy as to indicate V-0 in the UL 94 standard, as well as balance of general chemical and ~~physical properties~~ physical properties, in order to use the PBTs as industrial materials such as machine mechanism component parts, electrical/electronic component parts, automotive component parts, etc.

Please replace paragraph [0005] with the following:

[0005] Furthermore, with a rise of environment consciousness, there are movements having concerns about the influences of halogenated flame-retardant materials on the ~~environments~~ environment.

Please replace paragraph [0007] with the following:

[0007] As a method for flame-retarding a thermoplastic resin without using a halogenated flame ~~retardant~~, retardant, addition of a hydrated metallic compound, such as aluminum hydroxide, magnesium hydroxide, etc., has been widely known. However, the aforementioned hydrated metallic compound needs to be added in a large amount in order to attain sufficient flame retardancy, and this method has a drawback of losing an essential property of resin.

Please replace paragraph [0013] with the following:

[0013] ~~Theses~~ These are useful flame-retardant resin materials not employing a halogenated flame retardant, but have problems; for example, due to the compounding of such a resin as a polyphenylene ether, etc., the mechanical strength deteriorates, the fluidity at the time of injection molding deteriorates, the formed article colors yellow, and the hydrolysis resistance and the metal pollution characteristic are poor, and the uses are limited.

Please replace paragraph [0017] with the following:

[0017] The aforementioned resin component including a polyester based resin and a styrene based resin is a resin component useful for improvement in moldability related to warpage, etc., and the aforementioned flame retardant is a useful flame retardant not employing a halogenated flame ~~retardant~~, retardant, but does not have effect on the challenge of the metal pollution characteristic and deterioration in hydrolysis resistance due to the phosphorus-containing compound.

Please replace paragraph [0021] with the following:

[0021] ~~It is a purpose of the present invention~~would therefore be advantageous to attain highly reliable flame-retardant polybutylene terephthalate resin composition and formed article in which a non-halogenated flame retardant is compounded with a polybutylene terephthalate resin, and which have high degrees of flame retardancy and tracking resistance, and which are unlikely to allow occurrence of metal pollution or deterioration in hydrolysis resistance due to a phosphoric acid ester.

Please replace paragraph [0022] with the following:

DISCLOSURE SUMMARY OF THE INVENTION

[0022] ~~The present invention provides a~~A flame-retardant polybutylene terephthalate resin composition is provided wherein (A) 20-70% by weight of a polybutylene terephthalate resin or a mixture of a polybutylene terephthalate resin and a polyethylene terephthalate resin, (B) 1-20% by weight of a vinyl based resin, (C) 1-20% by weight of a phosphoric acid ester, (D) 1-30% by weight of a salt of a triazine based compound and cyanuric acid or isocyanuric acid, and (E) 0.1-5% by weight of an alkaline earth metal compound are compounded, and formed articles made of the flame-retardant polybutylene terephthalate resin composition so as to be used as machine mechanism component parts, electrical/electronic component parts or automotive component parts.

Please replace paragraph [0023] with the following:

~~BEST FORMS FOR CARRYING OUT THE INVENTION~~DETAILED DESCRIPTION

[0023] The (A) polybutylene terephthalate resin ~~in the present invention~~ is a polymer obtained by a polycondensation reaction of terephthalic acid or its ester-forming derivative and 1,4-butanediol or its ester-forming derivative; besides, isophthalic acid, naphthalenedicarboxylic acid, adipic acid, sebacic acid, dodecanedioic acid, oxalic acid, etc., as an acid component, and ethylene glycol, propylene glycol, neopentyl glycol, 1,5-pentanediol, 1,6-hexanediol, decamethylene glycol, cyclohexanedimethanol, cyclohexanediol, etc., or a long chain glycol having a molecular weight of 400-6000, namely, polyethylene glycol, poly-1,3-propylene glycol, polytetramethylene glycol, etc., as a glycol component, may be copolymerized at 20 mol% or less. As preferable examples of the polymer or copolymer, polybutylene terephthalate, polybutylene(terephthalate/isophthalate), polybutylene(terephthalate/adipate), polybutylene(terephthalate/sebacate), polybutylene(terephthalate/decanedicarboxylate), polybutylene(terephthalate/naphthalate), etc., may be cited, which may be used singly or used in a mixture of two or more species thereof. Incidentally, “/” herein means copolymerization.

Please replace paragraph [0029] with the following:

[0029] Furthermore, one or more species of polyester resins, such as a polyarylate resin, a full aromatic liquid crystal polyester, a semi- aromatic liquid crystal polyester, a polycyclohexandimethylene terephthalate resin, etc., may be compounded with the (A) component, and the compounding amount thereof is an amount within such a range that the effects ~~of the present invention~~ are not considerably reduced.

Please replace paragraph [0030] with the following:

[0030] As the (B) vinyl based resin, ~~resin in the present invention~~, a resin made by polymerizing one or more species of monomers selected from aromatic vinyl compounds, vinyl cyanide compounds, (meth)acrylic acid alkyl esters and maleimide based monomers, or a one made by graft-polymerizing or copolymerizing such monomers with a rubber based component, such as a polybutadiene based rubber, etc., etc., may be cited (hereinafter, these resins will sometimes be collectively referred to as “(co)polymer”) although the (B) vinyl based resin is not limited thereto.

Please replace paragraph [0031] with the following:

[0031] As the aforementioned aromatic vinyl compound, styrene, α -methyl styrene, vinyltoluene, divinyl benzene, etc., may be cited. As the vinyl cyanide compound, acrylo-nitrile, methacrylonitrile, etc., may be cited. As the (meth)acrylic acid alkyl ester, (meth)acrylic acid alkyl esters, such as methyl methacrylate, ethyl methacrylate, n-butyl methacrylate, methyl acrylate, ethyl acrylate, n-butyl acrylate, stearyl acrylate, etc., etc., may be cited. As the maleimide based monomer, maleimide, N-substituted maleimides, such as N-methyl maleimide, N-ethyl maleimide, N-phenyl maleimide, N-cyclohexyl maleimide as well as their derivatives, etc., etc., may be cited. Furthermore, vinyl based resins with a below-mentioned component being copolymerizable with the aforementioned vinyl based resin are also included in the present invention. As specific examples of the aforementioned copolymerizable component, diene compounds, maleic acid dialkyl esters, allyl alkyl ethers, unsaturated amino compounds, vinyl alkyl ethers, etc., may be cited.

Please replace paragraph [0034] with the following:

[0034] Furthermore, an acrylonitrile/styrene copolymer containing acrylonitrile at 10wt.% or greater and less than 50wt.% may be copolymerized with other copolymerizable monomers within such a range that the effects of the ~~present invention~~ will not be impaired. As the copolymerizable

monomers, aromatic vinyl compounds, (meth)acrylic acid alkyl esters, maleimide based monomers, etc., may be cited; specifically, the foregoing compounds may be cited.

Please replace paragraph [0043] with the following:

[0043] ~~As for the vinyl based resin used in the present invention, vinyl~~Vinyl based resins in which epoxy group-containing vinyl based monomers are graft-polymerized or copolymerized, and block copolymers epoxy-modified by an epoxidizing agent, such as styrene/butadiene/styrene resins, styrene/isoprene/styrene resins, styrene/ethylene/butadiene/styrene resins, etc., are preferably used as due to good compatibility with the (A) component. Moreover, vinyl based resins in which glycidyl methacrylate is graft-polymerized or copolymerized are more preferably used. In particular, ones in which glycidyl methacrylate is copolymerized are preferable, and copolymers in which styrene, acrylonitrile and glycidyl methacrylate are copolymerized are particularly preferable. The preferable amount of glycidyl methacrylate copolymerized in the aforementioned copolymer in which styrene, acrylonitrile and glycidyl methacrylate are copolymerized is preferably an amount that is effective in improving the compatibility with the (A) component. It is preferable that the amount be 0.1% by weight or greater with respect to the copolymer. If a large amount thereof is copolymerized, there is a problem of fluidity deterioration or gelation. Therefore, the amount is preferably 20% by weight or less, more preferably 10% by weight or less, and more preferably 5% by weight or less. Furthermore, there are no particular restrictions on the amounts of styrene and acrylonitrile copolymerized. However, with respect to the total of styrene and acrylonitrile, acrylonitrile is preferably at 10% by weight or greater and 50% by weight or less, and more preferably at 20% by weight or greater and 40% by weight or less.

Please replace paragraph [0045] with the following:

[0045] The number of layers that compose the multilayer structure is not particularly ~~limited,~~
limited. It is appropriate that the number of layers be 2 or greater. The number of layers may also be
3 or greater, or 4 or greater.

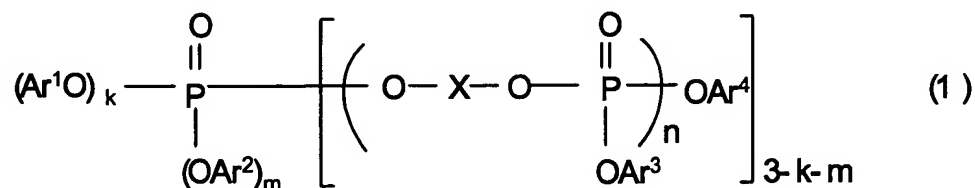
Please replace paragraph [0047] with the following:

[0047] In the multilayer structure, the kind of the rubber layer is not particularly limited, but it is
appropriate that the rubber layer be composed of a polymer component having rubber elasticity. For
example, rubbers composed of polymerized products of an acryl component, a silicone component, a
styrene component, a nitrile component, a conjugated diene component, a urethane component, an
ethylene propylene ~~component,~~ component, etc. may be cited. Preferable rubbers, for example, are
rubbers composed of polymerized products of acryl components, such as ethyl acrylate units, butyl
acrylate units, etc., silicone components, such as dimethylsiloxane unit, phenylmethylsiloxane units,
etc., styrene components, such as styrene units, α -methyl styrene units, etc., nitrile components, such
as acrylonitrile units, methacrylonitrile units, etc., and conjugated diene components, such as
butanediene units, isoprene units, etc. Furthermore, rubbers composed of copolymerized products of
combinations of two or more species of these components are also preferable. For example, (1)
rubbers composed of components in which acryl components, such as ethyl acrylate units, butyl
acrylate units, etc., and silicone components, such as dimethylsiloxane units, phenyl-methylsiloxane
units, etc., are copolymerized, (2) rubbers composed of components in which acryl components, such
as ethyl acrylate units, butyl acrylate units, etc., and styrene components, such as styrene units, α -
methyl styrene units, etc., are copolymerized, (3) rubbers composed of components in which acryl
components, such as ethyl acrylate units, butyl acrylate units, etc., and conjugated diene components,
such as butanediene units, isoprene units, etc., are compounded, and (4) rubbers composed of

components in which acryl components, such as ethyl acrylate units, butyl acrylate units, etc., silicone components, such as dimethylsiloxane units, phenylmethyilsioxane units, etc., and styrene components, such as styrene units, α -methyl styrene units, etc., are copolymerized, etc. may be cited. Furthermore, besides the aforementioned components, rubbers in which crosslinkable components, such as divinylbenzene units, allyl acrylate units, butylene glycol diacrylate units, etc., are copolymerized and crosslinked are also preferable.

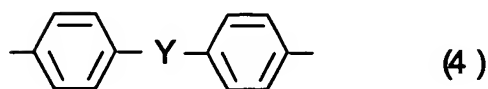
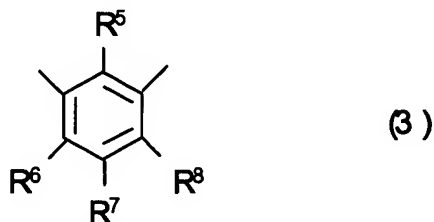
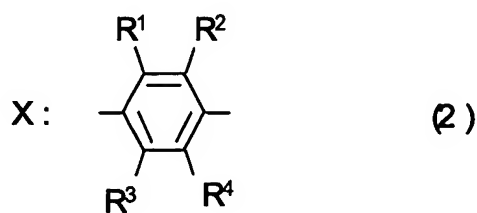
Please replace paragraph [0059] with the following:

[0059] The (C) phosphoric acid ester in the present invention is not particularly limited, but generally commercially sold items or synthesized phosphoric acid esters may be used. As specific examples, tricresyl phosphate, trixylenyl phosphate, cresyldiphenyl phosphate, triphenyl phosphate, tris-isopropylbiphenyl phosphate, trimethyl phosphate, triethyl phosphate, tributyl phosphate, trioctyl phosphate, tributoxyethyl phosphate, octyldiphenyl phosphate, orthophenyl phenol based phosphoric acid ester, pentaerythritol based phosphoric acid ester, neopentylglycol based phosphoric acid ester, substituted neopentylglycol phosphonate, nitrogenated based phosphoric acid ester, the aromatic phosphoric acid esters of the following expression (1), etc. may be cited. Particularly, the aromatic phosphoric acid esters of the following expression (1) are preferably used.



(In the above expression, Ar^1 , Ar^2 , Ar^3 and Ar^4 represent the same or different aromatic groups that do not contain a halogen. Furthermore, X represents a structure selected from the following expressions (2)-(4). In the following expressions (2)-(4), R^1 - R^8 represent the same or different

hydrogen atoms or alkyl groups having carbon numbers of 1-5, Y represents a direct coupling, O, S, SO₂, C(CH₃)₂, CH₂, CHPh, and Ph represents a phenyl group. Furthermore, n in the (1) expression is an integer of 0 greater. Furthermore, k, m in the (1) expression are each an integer of 0 or greater and 2 or less, and (k+m) is an integer of 0 or greater and 2 or less.) Incidentally, the aromatic phosphoric acid ester may be a mixture of aromatic phosphoric acid esters having different integers n and different structures.



Please replace paragraph [0067] with the following:

[0067] As for the salt of the (D) triazine based compound with cyanuric acid or isocyanuric acid, ~~acid, acid in the present invention,~~ the adduct between cyanuric acid or isocyanuric acid and a triazine based compound is preferable, and is an adduct having a composition of ordinarily 1-1 (molar ratio) and sometimes 1-2 (molar ratio). Of the triazine based compounds, ones that do not form a salt with cyanuric acid or isocyanuric acid are excluded. Furthermore, among the salts of the (D) triazine

based compound and cyanuric acid or isocyanuric acid, salts of melamine, benzoguanamine, acetoguanamine, 2-amide-4,6-diamino-1,3,5-triazine, mono(hydroxymethyl)melamine, di(hydroxymethyl)melamine and tri(hydroxymethyl)melamine are preferable, and particularly salts of melamine, benzoguanamine and acetoguanamine are preferable. They are produced by known methods. For example, a mixture of a triazine based compound and cyanuric acid or isocyanuric acid is prepared as water slurry, and is thoroughly mixed so that the salt of the two substances is formed as fine particles, and then the slurry is filtered and dried, so that the salt is generally obtained in a powder form. Furthermore, the aforementioned salt does not need to be completely pure but small amounts of unreacted triazine based compound or cyanuric acid or isocyanuric acid may remain therein. Furthermore, the number average particle diameter of the salt prior to the compounding into the resin is preferably 100-0.01 μm , and more preferably 80-1 μm , in view of the flame retardancy, mechanical strength, moist heat resistance characteristic, residence stability, surface characteristic of the formed article. Furthermore, if the dispersion of the salt is poor, a dispersing agent, such as tris(β -hydroxy-ethyl)isocyanurate, etc., or a known surface treating agent, etc., may well be used together.

Please replace paragraph [0069] with the following:

[0069] As the alkaline earth metal in the (E) alkaline earth metal compound, ~~compound used in the present invention~~, magnesium, calcium, barium, etc., are preferably cited. Furthermore, as the alkaline earth metal compound, hydroxides, oxides, inorganic acid salts, such as carbonic acid salts, sulfuric acid salts, acetic acid salts, phosphoric acid salts, etc., and organic acid salts, such as acetic acid salts, lactic acid salts, oleic acid, palmitic acid, stearic acid, montanoic acid, etc. are preferable. As specific examples, magnesium hydroxide, calcium hydroxide, barium hydroxide, magnesium oxide, calcium oxide, barium oxide, magnesium carbonate, calcium carbonate, barium carbonate, magnesium sulfate, calcium sulfate, barium sulfate, magnesium phosphate, calcium phosphate,

barium phosphate, magnesium acetate, calcium acetate, barium acetate, magnesium lactate, calcium lactate, barium lactate, and, furthermore, magnesium salts, calcium salts, barium salts, etc. of organic acids, such as oleic acid, palmitic acid, stearic acid, montanoic acid, etc., may be cited. Among these, hydroxides and carbonic acid salts of alkaline earth metals are preferably used. Particularly, magnesium hydroxide and calcium carbonate are preferably used, and more preferably, calcium carbonate is used. Such alkaline earth metals may be used in a fashion of one species or two or more species. Furthermore, as for the aforementioned calcium carbonate, colloidal calcium carbonate, precipitated calcium carbonate, ground calcium carbonate, levigated fine powder ground calcium carbonate, wet ground calcium carbonate (chalk), etc., according to the production methods, are known, and each one of them is encompassed in the present invention.

Please replace paragraph [0071] with the following:

[0071] By adding the (E) alkaline earth metal compound, the hydrolysis characteristic can be remarkably enhanced, due to the combined use with the (B) vinyl based resin. The phosphoric acid ester based compound effective as a non-halogenated flame retardant has a drawback of being inferior in hydrolysis resistance since the phosphoric acid ester linkage is easily hydrolyzable. ~~In the present invention,~~ by using the vinyl based resin and the alkaline earth metal compound in a combined use fashion, very high effect of enhancing hydrolysis resistance and improving metal pollution characteristic can be obtained. It is speculated that the very high effect is obtained due to the acid trap by the alkaline earth metal, and the prevention of elusion of the phosphoric acid ester by the addition of a vinyl compound having high affinity to the phosphoric acid ester.

Please replace paragraph [0072] with the following:

[0072] It is generally known that the hydrolysis of polyesters is accelerated by an acid or an alkali serving as a catalyst. Alkali metal compounds have alkalinity in many cases, and accelerates

the hydrolysis of polyesters in ordinary cases. Therefore, addition thereof is not preferable. Therefore, as for the alkaline earth metal compound ~~in the present invention~~, ones that are hardly soluble in water if in a neutral state, and that dissolves under an environment acidization and exhibits a neutralizing action if the phosphoric acid ester decomposes so that the system becomes acidic, are preferably used. The solubilities in the neutral state are described in various handbooks, for example, Chemical Handbook, published (1966) by Maruzen Kabushikigaisha, etc. The solubility in water is preferably 1g/100g water, more preferably 10^{-1} g/100g water, and particularly preferably 10^{-2} g/100g water. Incidentally, the solubility in water of calcium carbonate, which is most preferably used, is 5.2×10^{-3} g/100g water.

Please replace paragraph [0076] with the following:

[0076] ~~In the present invention, the~~The (F) epoxy compound may further be compounded. As the epoxy compound, glycidyl ester compounds, glycidyl ether compound and glycidyl ester ether compounds may be cited. These may be used in a fashion of one or more species.

Please replace paragraph [0082] with the following:

[0082] ~~In the present invention, it~~It is possible to compound a fiber reinforcement material in order to enhance the mechanical strength. As the fiber reinforcement material, glass fiber, aramid fiber, carbon fiber, etc., may be cited. As the aforementioned glass fiber, glass fibers which are of a chopped strand type or a roving type for use as a reinforcement material for ordinary polybutylene terephthalate resins and which have been treated with a sizing agent that contains a silane coupling agent, such as an aminosilane compound, an epoxysilane compound, etc., and/or urethane, vinyl acetate, one or more species of epoxy compounds, such as bisphenol A diglycidyl ethers, novolak based epoxy compounds, etc., etc., are preferably used. Furthermore, the silane coupling agent and/or the sizing agent mentioned above may be used as an emulsion liquid.

Please replace paragraph [0084] with the following:

[0084] Furthermore, ~~in the present invention,~~ an inorganic filler other than the fiber reinforcement material may further be compounded, which is for improving portions of the crystallization characteristic, arc resistance, anisotropy, mechanical strength, flame retardancy, heat deformation temperature, etc. of the ~~present invention~~ composition. As the inorganic filler other than the fiber reinforcement material, inorganic fillers in a spicular form, a granular form, a powder form and a layer form may be cited though the inorganic filler is not limited thereto. As specific examples, glass beads, milled fiber, glass flakes, potassium titanate whisker, calcium sulfate whisker, wollastonite, silica, kaolin, talc, smectite based clay minerals (montmorillonite, hectorite), vermiculite, mica, fluoro-taeniolite, zirconium phosphate, titanium phosphate, dolomite, etc., may be cited, and may be used in a fashion of one or more species. Furthermore, on the inorganic filler other than the fiber reinforcement material, a surface treatment, such as an ionization treatment, etc., epoxy compound treatment, a coupling agent treatment, may be performed. Furthermore, the average particle diameter of the granular-form, powder-form and layer-form inorganic fillers is preferably 0.1-20 μm , and particularly preferably 0.2-10 μm , in view of impact strength. Furthermore, the compounding amount of the inorganic filler other than the fiber reinforcement material is preferably an amount whose sum with the compounding amount of the fiber reinforcement agent does not exceed 1-45% by weight, in view of the fluidity during forming and the durability of forming machines and molds.

Please replace paragraph [0085] with the following:

[0085] ~~In the present invention, by~~By compounding a fluorine based compound, the melt dripping of the flame-retardant resin composition during combustion can be restrained, and the flame retardancy can be further enhanced. The fluorine based compound is a compound containing

fluorine in the substance's molecule. Specifically, polytetrafluoroethylene, polyhexafluoropropylene, (tetrafluoroethylene/hexafluoropropylene) copolymer, (tetrafluoroethylene/perfluoroalkyl vinyl ether) copolymer, (tetrafluoroethylene/ethylene) copolymer, (hexafluoropropylene/propylene) co-polymer, polyvinylidene fluoride, (vinylidene fluoride/ethylene) copolymer, etc., may be cited. In particular, polytetrafluoroethylene, (tetrafluoroethylene/perfluoroalkyl vinyl ether) copolymer, (tetrafluoroethylene/hexafluoropropylene) copolymer, (tetrafluoroethylene/ethylene) copolymer and polyvinylidene fluoride are preferable, and particularly polytetrafluoroethylene and (tetrafluoroethylene/ethylene) copolymer are preferable. Furthermore, if the fluorine based compound is compounded, the compounding amount thereof is 0.02-5% by weight, preferably 0.1-3% by weight, and more preferably 0.2-2% by weight, in view of flame retardancy and mechanical characteristic.

Please replace paragraph [0086] with the following:

[0086] ~~In the present invention, the~~The flame retardancy can be further enhanced by further compounding a polycarbonate resin. As the aforementioned polycarbonate resin, aromatic homo- or co-polycarbonates obtained by reacting an aromatic dihydric phenol based compound and phosgene or carbonic acid diester may be cited. The aromatic homo- or co-polycarbonate resin is a resin whose weight-average molecular weight is in the range of 10,000-1100,000. If the glass transition temperature is about 150°C and the weight-average molecular weight is in the range of 10,000-1,000,000, polycarbonate resins different in weight-average molecular weight may be used together. Polycarbonate resins having a weight-average molecular weight in the range of 60,000-1,100,000 are particularly preferably used. The weight-average molecular weight is a one obtained through measurement in terms of polystyrene by a gel permeation chromatography using tetrahydrofuran as a solvent. If the weight-average molecular weight is 10,000 or less, the excellent mechanical characteristic of the present invention is impaired, and therefore such weight-average molecular

weight is not preferable. If the weight-average molecular weight is 110,000 or greater, the fluidity during forming is impaired, and therefore such weight-average molecular weight is not preferable.

Please replace paragraph [0088] with the following:

[0088] As the aromatic dihydric phenol based compound, 2,2-bis(4-hydroxyphenyl)propane, 2,2-bis(4-hydroxy-3,5-dimethyl phenyl)propane, bis(4-hydroxyphenyl)methane, 1,1-bis(4-hydroxyphenyl)ethane, 2,2-bis(4-hydroxyphenyl)butane, 2,2-bis(4-hydroxy-3,5-diphenyl)butane, 2,2-bis(4-hydroxy-3,5-diethyl phenyl)propane, 2,2-bis(4-hydroxy-3,5-diethyl phenyl)propane, 1,1-bis(4-hydroxyphenyl)cyclohexane, 1-phenyl -1,1-bis(4-hydroxy-phenyl)ethane, etc. may be used. These may be used singly or as a mixture. However, if an amount of polycarbonate resin exceeding 5% by weight is compounded, the hydrolysis resistance may sometimes considerably deteriorate, and therefore, attention is needed. A preferable compounding amount of polycarbonate resin is less than 0.1-5% by weight, and preferably 0.5-3% by weight, from the aforementioned hydrolysis resistance and flame retardancy. Furthermore, a polycarbonate resin oligomer may be compounded if the amount thereof is in such a range that the characteristics of the ~~present invention~~ composition will not be impaired.

Please replace paragraph [0091] with the following:

[0091] ~~In the present invention,~~ a flame retarding assistant that assists in flame retardancy, such as a silicone compound, a phenol resin, a phosphonitrile compound, polyammonium phosphate, polymelamine phosphate, etc., may further be compounded. Such assistants may be used in a fashion of one or more species. If the aforementioned flame retarding assistant is compounded, the compounding amount thereof is preferably 1-10% by weight, and particularly preferably 2-7.5% by weight, in view of flame retardancy and mechanical properties.

Please replace paragraph [0104] with the following:

[0104] ~~In the present invention, an~~ An ethylene (co)polymer may further be compounded for the purpose of improving the toughness of the ~~present invention~~ composition, such as the impact strength, etc.. As the ethylene (co)polymer, ethylene polymers, such as high density polyethylene, low density polyethylene, very low density polyethylene, etc., and/or ethylene copolymers. The foregoing ethylene copolymer is obtained by copolymerizing ethylene and a monomer copolymerizable therewith. As the copolymerizable monomer, propylene, butene-1, vinyl acetate, isoprene, butadiene, or monocarboxylic acids and the like, such as acrylic acid, methacrylic acid, etc., or ester acids and the like thereof, dicarboxylic acids and the like, such as maleic acid, fumaric acid, itaconic acid, etc., etc. may be cited. The ethylene copolymer can be produced by an ordinarily known method. As specific examples of the ethylene copolymer, ethylene/propylene, ethylene/butene 1, ethylene/vinyl acetate, ethylene/ethyl acrylate, ethylene/methyl acrylate, ethylene/ethyl methacrylate acrylate, etc. may be cited. Furthermore, copolymers in which an acid anhydride or glycidyl methacrylate is graft- or co-polymerized with the aforementioned ethylene (co)polymer may preferably be used. These are used in a fashion of one species or two or more species, and may be used as a mixture with one or more species of the aforementioned ethylene (co)polymers. Furthermore, among the ethylene (co)polymers, a copolymer in which an acid anhydride or a glycidyl methacrylate is graft- or polymerized with polyethylene is preferably used since its compatibility with the (A) component is good. Furthermore, if the ethylene (co)polymer is compounded, the compounding amount thereof is preferably 1-10% by weight, and particularly preferably 2-7.5% by weight, in view of the flame retardancy and the impact strength of the resultant composition.

Please replace paragraph [0105] with the following:

[0105] ~~In the present invention, phenoxy~~ Phenoxy resin, an oxazoline compound, a carbodiimide compound, etc., which are hydrolysis resistance-improving materials, may be compounded. Particularly, phenoxy resin is preferably used. Furthermore, if the aforementioned hydrolysis resistance-improving material is compounded, the compounding amount thereof is preferably 0.1-7.5% by weight, and particularly preferably 0.2-5% by weight, in view of the hydrolysis resistance and the flame retardancy of the resultant composition.

Please replace paragraph [0107] with the following:

[0107] ~~In the present invention, a~~ hindered phenol antioxidant and/or a phosphite antioxidant may further be compounded as a stabilizing agent for providing very good anti-heat aging characteristic even if the composition of the ~~present invention~~ is exposed to high temperature for a long time may be compounded. If a hindered phenol antioxidant and/or a phosphite antioxidant is compounded, the compounding amount thereof is preferably 0.1-2% by weight, and particularly preferably 0.2-1% by weight, in view of anti-heat aging characteristic and flame retardancy.

Please replace paragraph [0110] with the following:

[0110] ~~In the present invention, it~~ It is possible to improve the fluidity and the mold releasability during forming by adding one or more species of lubricants. As the lubricant, metallic soaps, such as calcium stearate, barium stearate, etc., fatty acid esters, salts of fatty acid esters (including partially salt-converted ones as well), fatty amides, such as ethylenebisstearoamide, etc., fatty amides made of polycondensates made of ethylene diamine, stearic acid and sebacic acid, or polycondensates of phenylene diamine, stearic acid and sebacic acid, polyalkylene wax, acid anhydride-modified polyalkylene wax, and mixtures of aforementioned lubricants with fluorine based resins or fluorine based compounds may be cited. However, the aforementioned lubricant is not limited thereto. If a

lubricant is compounded, the compounding amount thereof is preferably 0.05-2% by weight, and more preferably 0.1-1% by weight.

Please replace paragraph [0111] with the following:

[0111] ~~In the present invention, it~~It is also possible to tone resins to various colors and improve the weather (light) resistance and the electrical conductivity by compounding one of more species of carbon black, titanium oxide and various color pigments and dyes. The compounding amount thereof is preferably 0.1-3% by weight, and more preferably 0.1-2% by weight, in view of the mechanical characteristic of the resultant composition.

Please replace paragraph [0114] with the following:

[0114] ~~In the present invention, it~~It is also possible to add one or more species of known non-halogenated flame retardants other than the present invention, so that reduction of the combustion time during combustion or reduction of gas generated during combustion can be expected. As for the known non-halogenated flame retardants, there is no limitation, but, for example, aluminum hydroxide, hydrotalcite, boric acid, calcium borate, calcium borate hydrate, zinc borate, zinc borate hydrate, zinc hydroxide, zinc hydroxide hydrate, zinc tin hydroxide, zinc tin hydroxide hydrate, red phosphorus, thermally expanded graphite, dawsonite, etc. may be cited. Mixture or surface coating with a thermosetting resin, such as a thermosetting melamine resin, a thermosetting phenol resin, a thermosetting epoxy resin, etc., is also permissible. Furthermore, mixture or surface coating with a coupling agent, an epoxy compound, or a fat-and-oil or the like, such as stearic acid, etc., etc., is also permissible.

Please replace paragraph [0116] with the following:

[0116] ~~In the present invention, although~~Although addition of a polyphenylene ether resin or a polyphenylene sulfide resin is preferable in order to further improve the flame retardancy, the

addition thereof may sometimes deteriorate the tracking resistance, hydrolysis resistance, metal pollution characteristic, and it is preferable that those resins not be compounded. If a resin mentioned above is compounded, it is preferable that the amount thereof not exceed 5% by weight.

Please replace paragraph [0117] with the following:

[0117] The flame-retardant polybutylene terephthalate resin composition and formed article of the present invention are produced by ordinarily known methods. For example, (A) a polybutylene terephthalate resin or a mixture of a polybutylene terephthalate resin and a polyethylene terephthalate resin, (B) a vinyl based resin, (C) a phosphoric acid ester, (D) a salt of a triazine based compound and cyanuric acid or isocyanuric acid, (E) an alkaline earth metal compound, and, in accordance with need, (F) an epoxy compound, a fiber reinforcement material, such as glass fiber, etc., and furthermore, in accordance with need, an inorganic filler other than the fiber reinforcement material, a fluorine based compound, a polycarbonate resin, various flame retarding assistants, an ethylene (co)polymer, a hydrolysis resistance improving material, a hindered phenol antioxidant and/or a phosphite antioxidant, and still further, in accordance with need, other necessary additives, coloring agents, such as pigments, dyes, etc., are pre-mixed or not pre-mixed, and are then supplied to an extruder, etc., and are thoroughly melted and kneaded, whereby a flame-retardant polybutylene terephthalate resin composition is prepared.

Please replace paragraph [0118] with the following:

[0118] As an example of the aforementioned premixing, the mixing through the use of a mechanical mixing device, such as a tumbler, a ribbon mixer, a Henschel mixer, etc., may be cited, although the dry blending alone can still deliver the desired effects of the present invention. Furthermore, as for the fiber reinforcement material, a method in which a side feeder is disposed at an intermediate point between the breech-loading portion and a vent portion of a multi-screw

extruder, such as a twin-screw extruder, etc., and the material is loaded through the side feeder, is also permissible. Furthermore, in the case of a liquid additive, a method in which a liquid loading nozzle is disposed at an intermediate point between the breech-loading portion and a vent portion of a multi-screw extruder, such as a twin-screw extruder, etc., and the additive is loaded therethrough by using a plunger pump, or a method in which the additive is supplied through the breech-loading portion, etc. with a metering pump,, etc. is also permissible.

Please replace paragraph [0121] with the following:

EXAMPLES

[0121] The effects of the ~~present invention~~composition will be described further in detail with reference to examples. Herein, % and part(s) all represent % by weight and parts by weight, and “/” in reference examples means copolymerization. Measurement methods for individual characteristics are as follows.

Reference Example 1: (A) polybutylene terephthalate resin (hereinafter, simply referred to as PBT)

Please replace paragraph [0164] with the following:

[0164] Table 1 indicates effects of the ~~present invention~~ compositions made up of components of the (A) PBT, the (B) vinyl resin, the (C) phosphoric acid ester, the (D) MC salt, and the (E) alkaline earth metal compound regarding hydrolysis resistance, tracking resistance and metal pollution characteristic.

Please replace paragraph [0165] with the following:

[0165] From Example 1-Example 13 in Table 1, it can be said that the ~~present invention~~ compositions are excellent in flame retardancy, hydrolysis resistance, tracking resistance and metal pollution characteristic while maintaining high degree of flame retardancy, and solve the challenges of Comparative Example 1-Comparative Example 3, and therefore have great effects.

Please replace paragraph [0174] with the following:

[0174] Calcium carbonate, etc., that is, an alkaline earth metal compound—~~compounded~~
~~compounded, in the present invention,~~ is generally compounded in plastics as an inorganic filler in
some cases for improving dimension stability, etc. However, the compounding amount thereof in
such cases is greater than 5%, and is ordinarily 10-30% in many cases in order to bring about the
effect as an ordinary filler. That is, ~~in the present invention,~~ the amount thereof compounded as a
general inorganic filler does not have effects of the ~~present invention—~~compositions herein. By
compounding calcium carbonate in a compounding amount of 5% or less, and preferably within the
range of the expression (5), the hydrolysis resistance and metal pollution characteristic effects of ~~the~~
~~present invention~~ are realized.

Please replace paragraph [0175] with the following:

[0175] Furthermore, from Comparative Example 9-Comparative Example 11, the compositions
in which PC, PPE or PPS was compounded in replace of the (B) vinyl resin were compositions
excellent in flame retardancy but inferior in hydrolysis resistance, tracking resistance and metal
pollution characteristic. Therefore, it can be said that by compounding the (B) vinyl resin, the
desired effects of ~~the present invention~~ can be obtained.

Please replace paragraph [0186] with the following:

[0186] The formed article made of the flame-retardant polybutylene terephthalate resin
composition of ~~the present invention~~ employs a non-halogenated flame retardant considered to have
less influence on the environment, and has safety from the electrical burning inside instruments, and
high degree of flame retardancy against the burning of the formed article itself, so that it is useful for
electrical/electronic component parts, machine mechanism component parts, and automotive
component parts. Specifically, breakers, electromagnetic switches, focus cases, flyback transformer,

formed articles for fusers of printers and copiers, general household electrical appliances, housings of OA machines, etc., coil bobbins, connectors, relays, disc drive chassis, transformers, switch component parts, convenience outlet component parts, electric motor component parts, sockets, plugs, capacitors, various cases, etc., resistors, electrical/electronic component parts in which metallic terminals or leads are incorporated, computer-related component parts, acoustic component parts, audio component parts such as laser discs, illumination component parts, telegraph/telephone instrument-related component parts, airconditioner component parts, component parts of home appliances, such as VTRs, televisions, etc., component parts for copiers, component parts for facsimiles, component parts for optical instruments, automotive ignition device component parts, connectors for motor vehicles, and various electrical equipment component parts for motor vehicles, etc. may be cited.

Please replace paragraph [0187] with the following:

[0187] Since ~~in the present invention~~ highly reliable formed articles having excellent performances particularly with respect to flame retardancy, hydrolysis resistance and metal pollution are obtained, the ~~present invention is~~compositions are especially useful for electrical/electronic component parts, such as relays, breakers, electromagnetic switches, focus cases, flyback transformers, formed articles for fusers of copiers and printers, etc.

Please replace paragraph [0188] with the following:

[0188] Furthermore, with regard to formed articles used in high voltage modification or component parts that receives high voltage, a tracking phenomenon in which carbonization progresses and results in ignition is apprehended. However, since ~~in the present invention a formed article is~~articles having a performance of 400V or greater in relative tracking index ~~is~~are obtained,

the ~~present invention is~~articles are especially useful as breakers, electromagnetic switches, and formed articles for fusers of printers and copiers mentioned above.